



**OST**  
Ostschweizer  
Fachhochschule

# PWA & Angular & Firebase

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# Angular & Firebase

# Anuglarfire

- <https://github.com/angular/angularfire>
  - Observable based - Use the power of RxJS, Angular, and Firebase.
  - Realtime bindings - Synchronize data in realtime.
  - Authentication - Log users in with a variety of providers and monitor authentication state.
  - Offline Data - Store data offline automatically with AngularFirestore.
  - Server-side Render - Generate static HTML to boost perceived performance or create static sites.
  - ngrx friendly - Integrate with ngrx using AngularFire's action based APIs.
  - Manage binary data - Upload, download, and delete binary files like images, videos, and other blobs.
  - Call server code - Directly call serverless Cloud Functions with user context automatically passed.
  - Push notifications - Register and listen for push notifications
  - Modular - Include only what's needed. No AngularFire package is above 3kb with most under 2kb (gzipped).

## E2E mit Firebase

- Protractor und die Firebase API sind nicht "kompatible"
- Um einen E2E zu definieren muss das automatische Warten vom Protractor abgeschaltet werden:

```
/**  
 * If set to false, Protractor will not wait for Angular $http and $timeout  
 * tasks to complete before interacting with the browser. This can cause  
 * flaky tests, but should be used if, for instance, your app continuously  
 * polls an API with $timeout.  
 *  
 * Call waitForAngularEnabled() without passing a value to read the current  
 * state without changing it.  
 */  
waitForAngularEnabled(enabled)
```

# PWA?

# PWA

**Progressive** web apps use **modern web APIs** along with traditional **progressive enhancement** strategy to create **cross-platform web applications**. These apps work everywhere and provide several features that give them the same user experience advantages as native apps.

## PWA advantages

PWAs should be discoverable, installable, linkable, network independent, progressive, re-engageable, responsive, and safe.

Quelle: <https://developer.mozilla.org/en-US/Apps/Progressive>

# PWA macht es Sinn?

TL;DR

AliExpress increases conversion rate for new users by 104% with new Progressive Web App

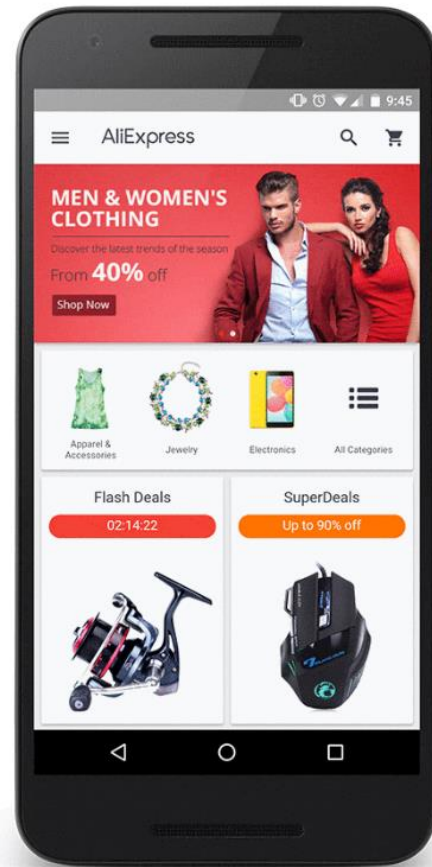
## Results

- ✓ 104% for new users across all browsers; 82% increase in iOS conversion rate
- ✓ 2X more pages visited per session per user across all browsers
- ✓ 74% increase in time spent per session across all browsers

[DOWNLOAD PDF CASE STUDY](#)

## About AliExpress

"Smarter shopping, better living!" is the motto of AliExpress, a website where shoppers can buy everything from baby clothes to refrigerators directly from China. Part of the Alibaba Group, the global online retail marketplace is now a popular e-commerce site in America, Russia, and Brazil.



Quelle: <https://developers.google.com/web/showcase/2016/aliexpress>

# PWA macht es Sinn?

**Kubota** launched their e-commerce PWA which resulted in a **192%** growth of daily visitors and **26%** growth of average monthly visits.



#Conversions #E-commerce #Fashion  
#Performance



Fashion brand **Rooted Objects** saw an increase in conversions of **162%** after launching their PWA. Page load times decreased by **25%** and average redirection time decreased by **80%**.



#Conversions #E-commerce #Fashion  
#Performance #Revenue



Tajawal and Almosafer saw an increase of **3×** in conversion rate from **0.3%** to almost **1.2%** within two weeks. Page load time decreased by **3×** from **13s** to **3.6s** for time to interactive.



#Conversions #Engagement #Offline  
#Performance #Service Worker #Travel



**Debenhams** found that the user journey from browsing to purchase was **2×** to **4×** on its PWA. The PWA delivered a **40%** increase in mobile revenue and a **20%** increase in conversion.



#Conversions #E-commerce #Performance  
#Revenue #Service Worker



Quelle: <https://www.pwastats.com/>



# PWA macht es Sinn? Auf IOS?

In an [interview](#) with Beet.tv, [Joey Marburger](#), Head of Product for The Washington Post, said:

*In our public-facing beta of the PWA web app, we've seen about 5x engagement – page views per visit, number of stories read.*

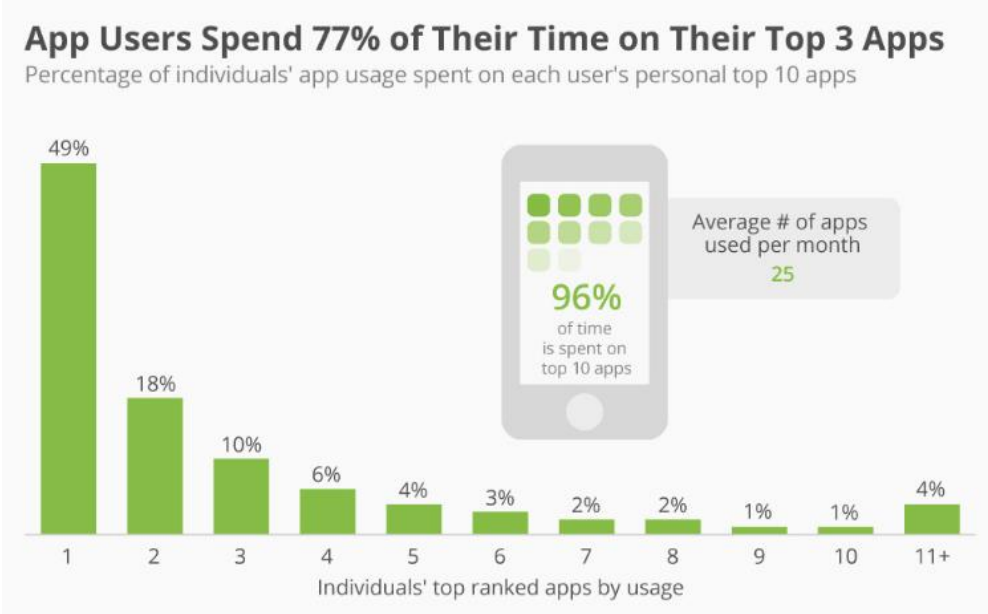
A 5x increase in engagement is an eye-opening number. I asked Mr. Marburger what the impact had been on iOS versus Android. He replied:



Quelle: <https://cloudfour.com/thinks/why-does-the-washington-posts-progressive-web-app-increase-engagement-on-ios/>

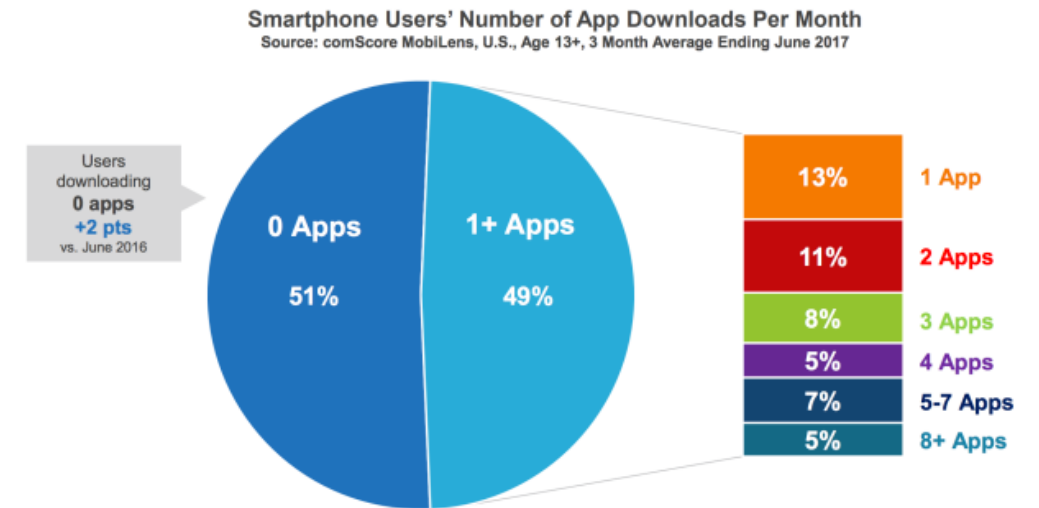
# PWA: Alternativen

- Alternative: Native Applikation
  - Nicht jeder Besucher der Webseite (mich eingeschlossen 😊) möchte eine App installieren
  - 50% der Personen installieren pro Monat keine neue App
  - Wenige Personen benutzen viele Apps pro Monat.



Quelle:

<https://buildfire.com/app-statistics>



Quellen:

<https://techcrunch.com/2017/08/25/majority-of-u-s-consumers-still-download-zero-apps-per-month-says-comscore>

# Eigenschaften einer PWA

- Safe
  - Die neuen Features wie Push-API sind nur über HTTPS möglich.
  - Chrome erlaubt diese Features auch auf Localhost für die Entwicklung
- Responsive
  - Das UI soll für alle Grössen passen. Thema: Media Queries
    - Desktop, Tablet, Smartphone, (Brillen, Uhren)
- Progressive
  - Die neuen API's nutzen um die bestmögliche UX zu erreichen,...
  - ... ohne die älteren Browser zu ignorieren
  - **Progressive Enhancement!**
- Linkable
  - Teilen von Inhalten ohne das der Sharing-Partner eine App installieren muss

# Eigenschaften einer PWA

- Discoverable
  - Die Webseite soll über Suchmaschinen auffindbar sein
  - <http://ogp.me/>
  - Web App Manifest
- Installable
  - Die Web Applikation mit Icon auf den Startbildschirm speichern
  - Web App Manifest
- Network independent
  - Die App soll auch mit schlechter, langsamer oder sogar gar keiner Verbindung funktionieren
- Re-engageable
  - Es soll möglich sein das die Verbindung zum Benutzer der Seite wieder aufgenommen werden, obwohl der Benutzer die Seite nicht geöffnet hat
  - Service Workers, Push-AP



## Installation / Auffindbarkeit

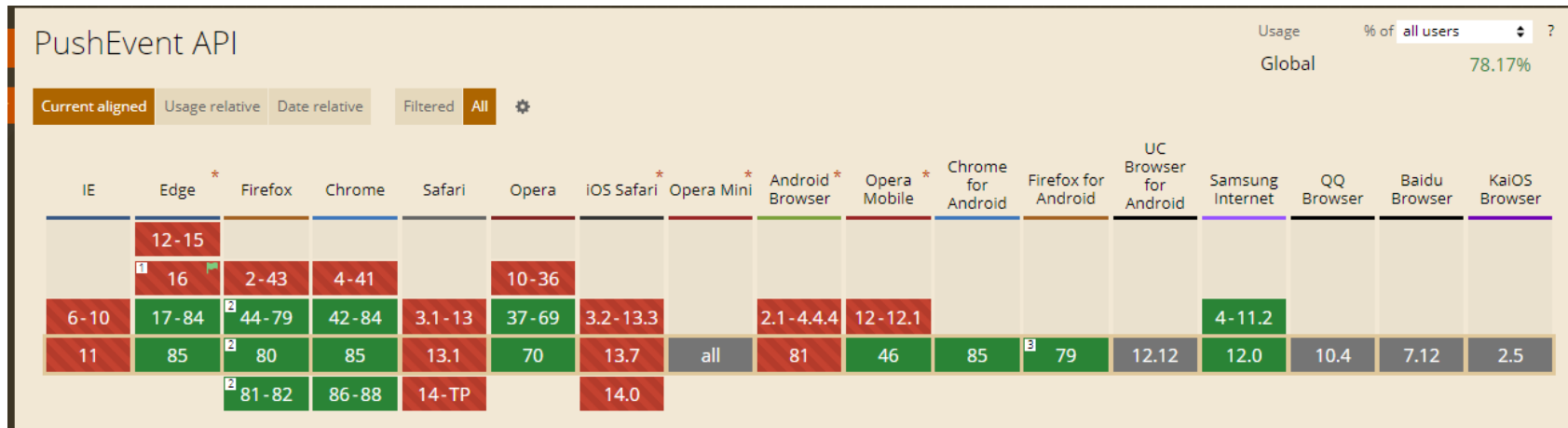
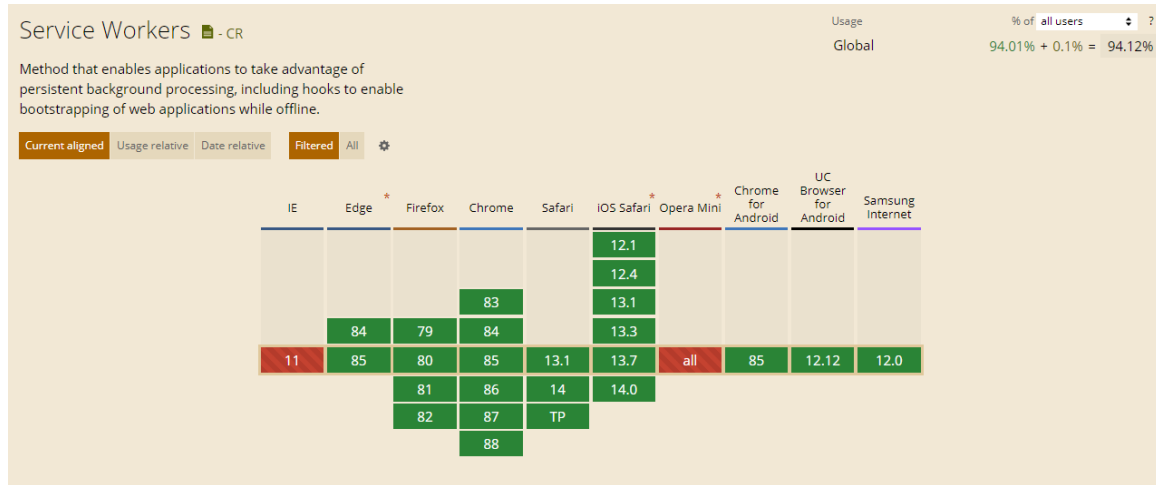
- Meta-Informationen notwendig: Web App Manifest
  - Icon
  - Start\_U
  - Erklärung aller Properties: <https://developer.mozilla.org/en-US/docs/Web/Manifest>
- Einbinden:
  - `<link rel="manifest" href="/manifest.webmanifest">`
- Generator:
  - <https://app-manifest.firebaseapp.com/>

# PWA Support

+10% seit 2019

PWA = Progressive Enhancement

Die Webseite sollte auch immer ohne funktionieren.



# Demo

## Demo

"ikaufzetteli" ist eine kleine Applikation welche es ermöglicht Einkaufslisten zu Verwalten. Die Einkaufslisten können "geshared" werden.

Demo: <https://ikaufzetteli.firebaseio.com/>



# Demo

- PWA
  - <https://angular.io/guide/service-worker-getting-started>
  - manifest.webmanifest, Firebase
  - Durch NGRX gekapselt
- Offline Support
  - <https://github.com/angular/angularfire/blob/master/docs/firestore/offline-data.md>
  - ngsw-config.json, online.service.ts
- Push Notification
  - firebase-messaging-sw.js und messaging.service.ts
- Hinweis zu: Full-Screen
  - Auf UX achten! Browser Features gehen verloren z.B. Share / Back-Button.
  - <https://developer.mozilla.org/en-US/docs/Web/API/Navigator/share> (experimental)
  - <https://developer.mozilla.org/en-US/docs/Web/CSS/@media/display-mode>

# Aufgabe

- Manifest für die eigene Applikation ( React oder Angular ) definieren
- Falls eigene Firebase Applikation vorhanden: E2E definieren
- Falls keine Firebase Applikation vorhanden: E2E erweitern
  - Z.B. Testen ob eine neue Liste erfolgreich angelegt wird.
  - <https://github.com/gfeller/ShoppingCard/>

- Zeit: 1 Stunde